WHAT IS CLAIMED IS:

1. A distortion correction device comprising:

an image signal acquiring unit for acquiring an image signal generated by an imaging unit imaging an object, said image signal representing an image of the object;

a detecting unit for detecting a line image from the image of said object;

a relative position calculating unit for calculating a relative position of said imaging unit with respect to said object according to said line image detected by said detecting unit;

a height distribution calculating unit for calculating a height distribution of an imaged surface of said object according to said calculated relative position and said detected line image; and

a processing unit for processing said image signal to correct distortion of the image of said object according to said calculated height distribution.

2. The distortion correction device according to claim 1, wherein

said line image includes an image of an end of said object, an image of a continuous line or a character string formed on the surface of said object.

3. The distortion correction device according to claim 1, wherein

said relative position calculating unit calculates the relative position as a distance of height between said imaging unit and the surface of said imaged object and a distance in a lateral direction crossing the direction of height between said imaging unit and the surface of said imaged object.

4. The distortion correction device according to claim 3, wherein

said detecting unit detects at least two line images from said acquired image signal, and

said relative position calculating unit calculates said distance in the lateral direction between said imaging unit and the surface of said imaged

object according to inclination of said two line images.

5. The distortion correction device according to claim 1, further comprising an edge image generating unit for generating an edge image with edges of said image enhanced, wherein

said detecting unit refers to said edge image to detect said line image.

6. The distortion correction device according to claim 5, further comprising a pre-processing unit for performing a predetermined pre-processing on said acquired image signal, said pre-processing unit performing at least one of scaling up/down, sharpness enhancement, white pixel expansion and smoothing, wherein

said edge image generating unit generates said edge image based on said pre-processed image signal.

7. A camera comprising:

an imaging unit for converting an optical image of an object into an electric signal to generate an image signal; and

a processor for calculating a positional relation between said imaging unit and said object according to said image signal and correcting said image signal according to said calculated positional relation to represent an image of said object as a plane object.

8. A camera comprising:

an imaging unit for converting an optical image of an object into an electric signal to generate an image signal;

a first calculating unit for calculating respective heights of parts of said object according to said image signal;

a second calculating unit for calculating a positional relation between said object and said imaging unit according to said image signal; and

a correcting unit for correcting an image of said object represented

by said image signal to scale up or down said image according to the respective heights of the parts of said object calculated by said first calculating unit and said positional relation calculated by said second calculating unit.

9. A method of correcting an image produced by imaging a surface of an opened book facing upward from above of the surface of said book by a camera having a non-fixed positional relation with said book, comprising the steps of:

imaging the surface of said opened book to generate an electric signal representing the image of the surface of said book;

measuring a distance between said camera and the surface of said book;

extracting, according to said electric signal, an edge image corresponding to an upper or lower end of said book in the image represented by said electric signal;

determining a position of said camera relative to the surface of said book according to said extracted edge image;

determining a height distribution of said upper or lower end of the surface of said book according to said measured distance, said extracted edge image of the upper or lower end of said book, and said position of said camera relative to the surface of said book;

determining a height distribution of an entire image of the surface of said book on the supposition that said book is at the same height in the direction in which said book is opened; and

converting, according to said determined height distributions, said image signal into a signal representing an image of the surface of said book as a plane surface.

10. A program for executing a method of correcting an image produced by imaging a surface of an opened book facing upward from above of the surface of said book by a camera having a non-fixed positional relation with said book, said method being executed by a computer included in said

camera, said program being used for executing by said computer the steps of:

imaging the surface of said opened book to generate an electric signal representing the image of the surface of said book;

measuring a distance between said camera and the surface of said book;

extracting, according to said electric signal, an edge image corresponding to an upper or lower end of said book in the image represented by said electric signal;

determining a position of said camera relative to the surface of said book according to said extracted edge image;

determining a height distribution of said upper or lower end of the surface of said book according to said measured distance, said extracted edge image of the upper or lower end of said book, and said position of said camera relative to the surface of said book;

determining a height distribution of an entire image of the surface of said book on the supposition that said book is at the same height in the direction in which said book is opened; and

converting, according to said determined height distributions, said image signal into a signal representing an image of the surface of said book as a plane surface.

11. A program for executing a method of correcting an image produced by imaging a surface of an opened book facing upward from above of the surface of said book by a camera having a non-fixed positional relation with said book, said method being executed by a computer provided separately from said camera, said program being used for executing by said computer the steps of:

reading an electric signal representing the image of the surface of said book, said electric signal generated by imaging the surface of said opened book;

inputting a distance between said camera and the surface of said book;

extracting, according to said electric signal, an edge image

corresponding to an upper or lower end of said book in the image represented by said electric signal;

determining a position of said camera relative to the surface of said book according to said extracted edge image;

determining a height distribution of said upper or lower end of the surface of said book according to said measured distance, said extracted edge image of the upper or lower end of said book, and said position of said camera relative to the surface of said book;

determining a height distribution of an entire image of the surface of said book on the supposition that said book is at the same height in the direction in which said book is opened; and

converting, according to said determined height distributions, said image signal into a signal representing an image of the surface of said book as a plane surface.

12. A recording medium recorded thereon the program according to claim 10.

13. A recording medium recorded thereon the program according to claim 11.